

WHAT IS CLAIMED IS:

1. A coil arrangement for an electrical machine, in which an electrical conductor is wound with a plurality of turns (N(L1), N(L2)), in each of at least two layers with the plurality of turns of a second layer being positioned above the plurality of turns of a first layer, wherein

the turns (N(L1)) in said first layer (L1) are arranged parallel to one another, and the turns (N(L2)) in the second layer (L2) are inclined, at a predetermined point, at a predetermined inclination angle (a), with respect to the turns (N(L1)) in the first layer (L1), and wherein the plurality of turns in the second layer are arranged parallel alongside one another.

2. A coil arrangement according to Claim 1, wherein the inclination angle (a) is such that each turn (N(L2)) in the second layer (L2) is inclined by at least one pitch width.

3. A coil arrangement according to Claim 1 or 2, wherein an individual turn (N(L1), N(L2)) in one of the layers (L1, L2) is inclined by a total pitch width (G), which is formed by a total number of pitches in an adjacent layer (L1, L2).

4. A coil arrangement according to Claim 1, wherein a coil start (S(A)) and coil end (S(E)) are passed out jointly at one end winding, with the turns

(N(L2)) in the second layer (L2) at an opposite end winding being inclined at the inclination angle (a).

5. The coil arrangement according to Claim 1, wherein the end windings are domed outwards.

6. The coil arrangement according to Claim 1, wherein the plurality of turns (N(L1), N(L2)), in one of said layers (L1, L2) are arranged parallel alongside one another, partially superimposed.

7. A method for producing a coil arrangement for an electric machine, comprising the steps of:

winding an electrical conductor on a coil former with a first plurality of turns to form a first layer;

winding said electrical conductor on a second plurality of turns to form a second layer on and above said first layer, wherein the step of forming said second layer includes the step of bending the electrical conductor through a predetermined bending angle at a predetermined point before each turn of said second plurality of turns.

8. The method according to Claim 7, wherein the turns in the first layer are wound parallel alongside one another, with the turns in the second

layer being inclined through the bending angle with respect to the first layer and being arranged parallel alongside one another.

9. The method according to Claim 7, wherein the bending angle is such that each turn in the second layer is inclined by at least one pitch width.

10. The method according to Claim 7, wherein one turn in one of the layers is inclined by the total pitch width, which is formed by the total number of pitches in an adjacent layer.

11. The method according to Claim 7, wherein a coil start and coil end are passed out jointly at one end, with the turns in the second layer at the opposite end winding being inclined at the bending angle before being wound on to the coil former.

12. The method according to Claim 7, wherein the turns in a single layer are wound parallel alongside one another, partially superimposed.

13. An apparatus for winding an electrical conductor with a number of turns arranged above each other in a number of layers, comprising:  
a guide body;

a coil former wherein the guide body is provided for winding the electrical conductor on to said coil former;

and wherein said guide body bends the electrical conductor through a bending angle at a predetermined point before a coil turn is wound on to said coil former.

14. The apparatus according to Claim 13, wherein said guide body is movable.

15. The apparatus according to Claim 13, wherein said guide body includes a motor for moving two bending pins.